

**RANCANG BANGUN TRAINER KIT *SMART RELAY* SCHNIDER SR2
B121BD DENGAN SIMULASI SISTEM MOTOR DC SEBAGAI SARANA
PEMBELAJARAN DI LABORATORIUM MEKATRONIKA**

Nama	: Richard Wilson Hasibuan
Nim	2103230002
Dosen Pembimbing M.T.)	: Reinaldi Teguh Setyawan, S.T.,

Abstrak

Perkembangan sistem otomasi industri menuntut penguasaan teknologi kendali logika terprogram (*Programmable Logic Controller/PLC*) dalam dunia teknik mesin, khususnya pada bidang mekatronika. Namun, keterbatasan sarana praktik berbasis PLC di laboratorium kerap menjadi kendala dalam proses pembelajaran sistem kendali modern. Oleh karena itu, penelitian ini bertujuan untuk merancang dan membangun sebuah trainer kit berbasis PLC *Smart Relay Schneider* SR2 B121BD yang dapat digunakan sebagai media pembelajaran dan simulasi sistem otomasi skala laboratorium. Perancangan difokuskan pada konfigurasi panel wiring modular yang mudah dioperasikan, dapat digunakan untuk berbagai skenario logika dasar, serta mendukung eksperimen input-output digital secara langsung. Trainer kit dirancang agar kompatibel dengan perangkat lunak pemrograman *GX Developer* dan dilengkapi dengan indikator visual, tombol kontrol, serta port ekspansi I/O. Metode penelitian meliputi tahapan perancangan sistem, pemilihan komponen, perakitan, dan perencanaan uji fungsi. Diharapkan trainer kit ini mampu menjadi solusi pembelajaran teknik mekatronika yang efektif dan efisien di lingkungan laboratorium jurusan teknik mesin. Hasil akhir penelitian ini akan mendukung pengembangan kompetensi praktikal mahasiswa dalam memahami dan menerapkan sistem kendali berbasis PLC.

Kata kunci: Trainer Kit PLC, *Smart Relay Schneider* SR2 B121BD, Media Pembelajaran, Mekatronika.

DESIGN AND DEVELOPMENT OF A SCHNEIDER SMART RELAY SR2 B121BD TRAINER KIT WITH DC MOTOR SYSTEM SIMULATION AS A LEARNING MEDIUM IN A MECHATRONICS LABORATORY

Nama	: Richard Wilson Hasibuan
Nim	2103230002
Dosen Pembimbing M.T.)	: Reinaldi Teguh Setyawan, S.T.,

Abstract

The development of industrial automation systems requires mastery of programmable logic controller (PLC) technology in the world of mechanical engineering, especially in the field of mechatronics. However, the limited availability of PLC-based practical facilities in laboratories often becomes an obstacle in the process of learning modern control systems. Therefore, this study aims to design and build a PLC-based trainer kit using the Schneider SR2 B121BD Smart Relay that can be used as a learning and simulation medium for laboratory-scale automation systems. The design focuses on a modular wiring panel configuration that is easy to operate, can be used for various basic logic scenarios, and supports direct digital input-output experiments. The trainer kit is designed to be compatible with GX Developer programming software and is equipped with visual indicators, control buttons, and I/O expansion ports. The research methods include system design, component selection, assembly, and functional test planning stages. It is hoped that this trainer kit will be an effective and efficient mechatronics learning solution in the mechanical engineering department laboratory environment. The final results of this research will support the development of students' practical competencies in understanding and applying PLC- based control systems.

Keyword: PLC Trainer Kit, Schnider SR2 B121BD Smart Relay, Learning Media, Mechatronics.